**Objectives**

Upon completing this activity, you will be able to:

* Explain how natural processes involving greenhouse gases cause warming of the Earth’s atmosphere.

**Causal Principles**

1. Gravitational energy, thermal energy and/or chemical **energy** drive all movement and change of matter on Earth.

3. Matter moves and changes to return a system to **equilibrium.**

1. **Temperature** is a measure of the movement of molecules. Higher temperature means molecules are moving faster.

**PART 1: Background Notes**

**Part 2. Group Work**

1. On the diagram below draw in the features of the greenhouse effect. Label all parts of the greenhouse effect. Use and label arrows to represent processes.



2. Next, label and describe where the three causal principles listed at the beginning of this activity would fit into this picture. Make sure you understand exactly how the causal principles are related to components of the greenhouse effect.

3. Imagine that a new material for paving roads is developed that is much cheaper to produce and long lasting. All of Earth’s roads are repaved with this new material, which also happens to reflect twice as much sunlight than current road materials. How might this impact Earth’s atmospheric temperature?

4. Imagine that climate changes significantly, and Earth’s atmosphere fills with clouds. How might this impact Earth’s atmospheric temperature?

**Part 3: Homework**

If you complete the group work, you may work on the homework **on your own.** This means your answers should be generally unique from other students’ answers. **Submit your homework using ANGEL**.

1. Where would the heat radiated by the Earth go if greenhouse gases did not exist?
2. What would happen to the temperature of the atmosphere if you were to increase the amount of greenhouse gas in the atmosphere?
3. Imagine you were having a conversation with someone who said the greenhouse effect is the cause of global warming. Write a response to this statement that is scientifically correct based on what you have learned in this class and activity.